REMARKS

Applicants thank the Examiner for the thorough examination of the application.

Claims 1, 3-10, 12, 13, 15-18 and 21-28 are pending in this application. Claims 1, 10 and 25 are independent. Claims 1, 10 and 25 are amended and new claim 28 is added. No new matter is involved. Support for new claim 28 is found throughout Applicants' originally filed disclosure, which includes a specification with a main body and claims, and drawings. Specific support for the "branched" feature is found, for example, on page 10, first full paragraph.

Reconsideration of the present application is respectfully requested.

Personal Interview

Applicants acknowledge with appreciation the courtesies extended by Examiners Rude and Chowdhury to their below-named representative, Mr. Robert J. Webster, during the personal interview conducted on March 21, 2006. During that interview, possible claim amendments were discussed to clearly patentably define over the applied art.

Premature Final Office Action

Applicants respectfully submit that the Office Action was improperly, and prematurely, made a final Office Action. The Amendment filed on November 14, 2005, filed as a Submission under 37 CFR §1.114(c), clearly added two new claims, i.e., claim 27 which positively recites that the gate dummy pattern and the protrusion of the data line are used as a black matrix to result in an aperture ratio increase of from about 5 to 6%; and claim 28, which adds a feature to claim 1, namely, an ITO pixel electrode at a portion of the substrate divided by the gate line and the data line.

These new claimed features were not previously recited in either claim 7, from which claim 26 depends, or in claim 1, from which claim 27 depends. Because of this, the claimed invention presented in the Amendment of November 14, 2006 was not the same invention that was in issue prior to this Amendment being filed.

The finality is justified because "all claims are directed to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office Action if they had been entered in the earlier application." During the interview, Examiner Rude stated that his understanding of the quoted language, which he stated is in a form paragraph that Examiners use, is that all claims are directed to the same application because they could have been finally rejected on the grounds and art of record.

Applicants have a fundamental disagreement with the Examiner on this issue for a number of reasons.

Firstly, the language "all claims are directed to the same invention claimed in the earlier Application" is separate and distinct from "could have been finally rejected on the grounds and art of record." In this regard, Applicants respectfully submit that if claim 26 is the same invention as that recited in claim 7, from which it depends, and claim 27 is the same invention as that recited in claim 1, from which it depends, then why didn't Applicants receive a statutory double patenting rejection of claim 26 over claim 7 and of claim 27 over claim 1. Applicants respectfully submit that this did not occur because what is recited in claim 26 is not the same invention as what is recited in claim 7 and what is recited in claim 27 is not what is recited in claim 1. Moreover, in order to reject claim 26, the Office Action improperly relies on Applicants' own disclosure on page 8, lines 25-31 instead of on Kim, and never explicitly states where the claimed ITO pixel electrode feature is disclosed by the applied art.

Secondly, in an Advisory Action dated November 4, 2004, the Amendment filed on October 13, 2004 was not entered because the claim amendments were deemed to require further consideration and/or search, and were not entered for that reason. It is inconsistent to not have entered the October 13, 2004 claim amendments because they would require further consideration and/or search, yet base a first-action final rejection on the ground that the claim amendments filed on November 14, 2005 that require further consideration and/or search, really do not require further consideration and/or search.

Thirdly, by making this Office Action final, the USPTO is requiring Applicants to pay $790 for an RCE fee to enter the November 14, 2005 and requiring Applicants to pay yet another $790 to file another RCE to enter any Amendment filed in response to the outstanding Office Action. Applicants respectfully submit that this is patently unfair to Applicants and denies then fundamental substantive and procedural due process in a fair and equitable manner. Applicants respectfully submit that they should be entitled to amend the claims under 37 CFR §1.111 based on the fact that they have had to pay their attorneys to analyze and respond to the outstanding Office Action and have paid the equivalent of another patent application filing fee, in the form of an RCE filing fee, and should have the same right to a first action that is not a final Office Action as is accorded to Applicants who pay a basic patent application filing fee.

Fourthly, instead of advancing the *ex parte* prosecution of this Application in a reasonable manner, this first action final rejection is actually making it much more expensive and time consuming to frame and resolve the outstanding issues in the already extensive prosecution history of this patent Application.

Accordingly, reconsideration and withdrawal of the finality of the outstanding Office are respectfully requested.

Specification Objections

The Office Action objects to the specification. The Office Action indicates that the language "applying a data signal to the pixel electrode" on page 6, lines 15 and 16 of the main body of Applicants' specification is somehow improper.

Applicants respectfully submit that the language objected to is completely proper to one of ordinary skill in the art. An active matrix liquid crystal display (AMLCD) has to display data provided to it, and the data is supplied to the AMLCD via a data line. The specification does not state that the data is provided to the pixel electrodes by a direct connection between a data line and a pixel electrode, as the Examiner appears to believe. Moreover, as is well known in the art, capacitive coupling between a data line and a pixel electrode, sometimes referred to as crosstalk, may also exist in AMLCDs. One of ordinary skill in the art recognizes this and views Applicants' disclosure with this in mind.

Applicants fails to see anything unclear about, or otherwise wrong with, stating that "a storage capacitor 18 provided between the pixel electrode 14 and the gate line 4 at the previous stage plays a role to prevent a voltage variation in the pixel electrode 14 by charging a voltage in a period at which a gate high voltage is applied to the previous-stage gate line 4 and discharging the charged voltage in a period at which a data signal is applied to the pixel electrode 14," as is stated on page 6, lines 9-16.

Nor has the Office Action explained why there is anything wrong with this disclosure.

One of ordinary skill in the art realizes that if the data signal were not applied to the pixel electrode, then the pixel electrode could not display any data and the AMLCD would be useless. One of ordinary skill in the art also realizes that the data signal is applied, in an active matrix LCD,

via a drain electrode of an active matrix transistor, and that there is capacitive coupling of the data signal as well.

Why the Office Action takes issue with the language of page 6, lines 15 and 16 is unclear in view of the skill and knowledge of one of ordinary skill in the art to whom the specification is directed.

The Examiner notes that the pixel electrode is connected to the drain electrode of the TFT. Applicants agree and respectfully submit that one of ordinary skill in the art takes that fact into consideration in understanding the meaning of the language in issue.

Applicants find nothing in using the language "applying" in this context repugnant to the usual meaning of the term because one of ordinary skill in the art fully understands what is meant by applying a data signal to a pixel electrode, as explained above.

The assertion that "literally applying the 'data signal' to the pixel electrode would result in all pixels along the data line being switched together despite the status of the gate line" is ample evidence that this result was never intended by the language in issue and is based on an interpretation of the language in issue that would be dismissed by one of ordinary skill as what was meant by the language in issue.

Applicants agree with the Examiner that the data signal is applied to the pixel electrode via a thin film transistor, but does not believe that the specification needs to be amended to point this out because one of ordinary skill in the art. To which the disclosure is directed, readily understands this.

Accordingly, Applicants respectfully submit that there is nothing unclear or otherwise wrong with their specification on page 6, in lines 15 and 16 and that this objection is improper and should be withdrawn.

Claim Objections

Claims 1 and 10 stand objected to for reciting "signal to a pixel electrode" in two locations in each of claims 1 and 10. The Office Action alleges that this is incorrect because "[O]nly one signal is applied to the pixel electrode, and it is applied by the drain electrode of the transistor."

Applicants respectfully disagree with this allegation. Applicants apply a data signal to the pixel electrode - see page 6 of Applicants' specification, which clearly discloses "a data signal is applied to the pixel electrode" (lines 15 and 16), for example, and Applicants apply a voltage signal to the pixel electrode via the gate line due to the fact that the gate dummy pattern defines a second storage capacitor along with the pixel electrode and, as a result, a capacitance value of the second storage capacitor caused by the gate dummy pattern is added to the existing storage capacitor so that a voltage at the pixel electrode can remain more stable (paragraph bridging pages 7 and 8 of Applicants' specification).

Applicants presented this argument in the Reply filed on April 28, 2004 and respectfully submit that it is as valid now as it was then.

Nevertheless, in an attempt to reduce and simplify the issues with respect to which Applicants and the Examiner are at an impasse, Applicants have amended claims 1 and 10 to resolve this issue.

Accordingly, withdrawal of this objection is respectfully requested.

Rejection under 35 U.S.C. §103(a)

Claims 1, 3, 5, 6, 8, 10, 12, 15, 17, 21-24, 26 and 27 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,429,909 to Kim et al. (Kim) in view of U.S. Patent No. 6,313,889 to Song et al (Song). This rejection is respectfully traversed.

Because the rejection is based on 35 U.S.C. §103, what is in issue in such a rejection is "the invention as a whole," not just a few features of the claimed invention. Under 35 U.S.C. §103, "[a] patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." The determination under section 103 is whether the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. *See* In re O'Farrell, 853 F.2d 894, 902, 7 USPQ2d 1673, 1680 (Fed. Cir. 1988). In determining obviousness, the Examiner must explain what the differences between the claimed invention and the prior art are and provide objective factual evidence to support a conclusion that it would be obvious to one of ordinary skill in the art to achieve the claimed invention, which includes those missing features.

Furthermore, in rejecting claims under 35 U.S.C. §103, it is incumbent on the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See* In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one of ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal Inc. v. F-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hospital Systems, Inc. v. Montefiore Hospital,

732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the Examiner are an essential part of complying with the burden of presenting a *prima facie* case of obviousness. Note, In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be suggested or taught by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1970). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Moreover, a showing of a suggestion, teaching, or motivation to combine the prior art references is an "essential evidentiary component of an obviousness holding." C.R. Bard, Inc. v. M3 Sys. Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). This showing must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not "evidence." *See* In re Dembiczak, 175 F.3d 994 at 1000, 50 USPQ2d 1614 at 1617 (Fed. Cir. 1999).

Kim discloses an LCD in which repair lines which are used as substitutes for open-line data lines, are separately formed on either side of the gate lines and on the same layer as the gate lines. In Kim, the repair lines are used only by being connected to open data lines, and are used only to repair the broken (open circuit) data lines by connection, not by disconnection.

Moreover, contrary to the assertions in the Office Action, Kim does not disclose a gate dummy pattern. Rather, Kim discloses repair lines for data lines. Kim's repair lines are not disclosed

to be gate lines nor are Kim's repair lines disclosed to be connected with gate lines. Kim's repair lines are only disclosed to be connected with data lines.

The Office Action responds to these arguments by stating, on page 18 of the outstanding Office Action, that Kim's line structures are well known in the art to be that of "gate dummy patterns" despite the terminology as used by Kim, i.e., the wording in col. 2, lines 10-17 because those structures are patterned from the gate layer. The outstanding Office Action also references col. 8, lines 37-40 in this regard to support its position. In actuality, col. 8, lines 37-40 constitute only part of the Kim disclosure regarding the method of manufacturing its LCD. Col. 8, lines 34-36 explicitly state that "[I]n this method, the secondary connecting pattern connects the data line to the repair lines through the contact holes." Kim goes on to state, at col. 8, lines 37-40 that "[A]s shown in Fig. 15A, a metal layer for gate wires such as aluminum (Al) or Molybdenum (Mo) is deposited and patterned to form the gate line 100 and the repair lines 110 and 120." Thus, the language relied on in the Office Action does not support a conclusion that Kim discloses gate dummy patterns.

The Office Action then states that "intended use is not claimed." Applicants do not understand what this has to do with rebutting Applicants' arguments traversing the rejection. Moreover, because Applicants have positively recited dummy data lines, the meaning of which is clear and that terminology has to be given patentable weight. All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Song is directed to an LCD having a layout designed to repair defects such as (1) disconnection of display signal lines and scanning signal lines, (2) shorting of the pixel electrode and the signal line, and (3) loss of the electrode of a switching element. See the Abstract of Song.

Instead of using a prior art repair line RL that crosses a plurality of scanning lines (Fig. 5 of Song), Song uses left and right auxiliary scanning lines connecting upper and lower first signal lines to form left and right boundaries of each pixel region (paragraph bridging cols. 5 and 6 of Song), a second signal line stretching in a vertical direction crossing upper and lower first signal lines, a plurality of connect means connecting various upper and lower signal lines and auxiliary signal lines. Moreover (col. 6, lines 45-49), Song prefers that its auxiliary signal lines are connected to the upper first signal line or the lower first signal line, and the upper and lower first signal lines and the auxiliary signal lines are used as a capacitance electrode.

In other words, Song has a decidedly more complex and different LCD matrix circuit layout than does Kim.

In one embodiment of Song (Figs. 19A and 19B), relied on in the Office Action, Song repairs a specific defect, i.e., where "the data line D placed between a diverging point of the contact portion 21 in a pixel PX1 and a diverging point of the source electrode 7 of a pixel PX2 which is formed below the pixel PX1 is disconnected (a) so that a data signal cannot be transferred to a portion following the disconnected point. Here, the arrows shown in Figs. 19A and 19B represent the flow of the signal." (col. 16, lines 1-8).

The repair relied on in the Office Action is discussed in col. 17, starting in line 4. The repair includes respectively shorting (c and d) the drain electrode 8 and the gate electrode 2, and the gate electrode 2 and the source electrode 7 and the two parts of the upper gate line of the pixel PX2, above and below the gate electrode 2, are disconnected (e and j). As a result, the data signal comes to flow along the data line again.

Based on these teachings of Kim and Song, the Office Action concludes that it would have been obvious "to modify Kim with the redundancy electrodes for electrically connecting the gate line to the broken data line per Song."

Applicants respectfully disagree with this conclusion for a number of reasons.

In the first place, the Office Action provides no objective factual evidence to support a conclusion that one of ordinary skill in the art would be motivated to modify Kim's simple LCD matrix circuit to make it more complex by adding multiple, upper and lower, auxiliary signal lines and connect lines just to repair data lines when Kim has a far less complex and far simpler data line repair mechanism in place that has no disclosed need to be improved upon.

The Office Action responds by stating that the additional complexity of Sing would obviously increase the number of possible repairs that can be made because there are more available conductive lines to run signals in a greater number of ways, which would increase the facilitation of repairs, providing ample motivation to modify Kim in view of Song. Applicants might agree if all that was involved was a simple matter of hooking up a few more electrodes to an electronic device. However, what is involved here is a complete redesign of Kim's active matrix LCD, which is different in many respects from that of Song. For example, Kim discloses, in col. 2, lines 61-63 that an advantage of its device is that the repair lines and connecting patterns for repairing data line defects are formed without an additional process, which simplifies the manufacturing process. Applicants respectfully submit that the Office Action fails to present any objective factual evidence that modifying Kim in view of Song, as proposed, e.g., by adding multiple, upper and lower, auxiliary signal lines and connect lines would result in simplification of the manufacturing process. In fact, the Office Action is totally devoid of any detain concerning exactly what manufacturing changes would be involved in making Kim admittedly more complex. Such details are left up to

speculation. It is well settled that a rejection under 35 U.S.C. §103 cannot properly be based on speculation but must be based on objective factual evidence of record. *See* In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968). *See, also*, In re GPAC, Inc., 35 USPQ2d 1116 at 1123 (Fed. Cir. 1995) and Ex parte Haymond, 41 USPQ2d 1217 at 1220 (Bd. Pat. App. & Int. 1996).

A factual inquiry whether to modify a reference must be based on objective evidence of record, not merely conclusory statements of the Examiner. *See* In re Lee, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

Applicants respectfully submit that one of ordinary skill in the art would not be motivated to make Kim more complex, as suggested by the Office Action, because presumably that would require further manufacturing process steps and might well not be able to use the process steps set forth in connection with Figs. 15A through 15E, especially where, as here, the Office Action fails to explain exactly how Kim's disclosed manufacturing steps are to be modified in view of a reference (Song) that uses left and right auxiliary scanning lines connecting upper and lower first signal lines to form left and right boundaries of each pixel region (paragraph bridging cols. 5 and 6 of Song), a second signal line stretching in a vertical direction crossing upper and lower first signal lines, a plurality of connect means connecting various upper and lower signal lines and auxiliary signal lines. Moreover (col. 6, lines 45-49), Song prefers that its auxiliary signal lines are connected to the upper first signal line or the lower first signal line, and the upper and lower first signal lines and the auxiliary signal lines are used as a capacitance electrode, i.e., a decidedly more complex and different LCD matrix circuit layout than does Kim.

In the second place, not only is the relied upon (in Song) repair structure far more complex than Kim's, but Song's repair technique is far more complex than is Kim's. In Kim, if, for example,

data line 400 is not connected to repair lines 110 and 120, the repair lines 110 and 120 are simply shorted to the data line 400 by laser irradiation. On the other hand, in Song, as discussed above, one must not only make two shorts (c and d), but also two disconnects (e and j) to repair the data line.

Applicants respectfully submit that one of ordinary skill in the art would have no proper motivation to add the aforementioned structural and procedural complexity to Kim to achieve what Kim achieves with a far simpler structure and procedure. In fact, this added structural and procedural complexity is objective factual evidence that one or ordinary skill in the art would have a disincentive to achieve the proposed modification of Kim in view of Song.

T*he Office Action states that complexity is not considered so daunting to preclude combining the secondary references. Applicants respectfully disagree where additional costs of manufacturing such complex devices and a resulting more time consuming repair process are taken into consideration, for example.*

Applicants respectfully submit that the inferences one of ordinary skill in the art would draw from Kim and Song include the disincentive to modify Kim by making Kim more structurally complex in order to achieve what Kim does with a far simpler structure, and the disincentive to require a more complicated and, presumably, more time consuming procedure to repair data lines.

A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. *See* W.L. Gore & Assoc., Inc. v. Garlock, Inc., 721 F.2d 1540, 1550-51, 220 USPQ 303, 311 (Fed. Cir. 1983) (the totality of a reference's teachings must be considered), cert. denied, 469 U.S. 851 (1984).

Moreover, the statement in the first sentence on page 11 of the Office Action, i.e., that "[S]ong is evidence that ordinary workers in the art of liquid crystals would find the reason,

suggestion or motivation to form the gate dummy pattern in such a manner as to serve as a redundancy electrode for electrically connecting the gate line to the broken line to effect repairs" is nothing more than a broad general conclusion that does not constitute evidence of proper motivation to fundamentally redesign and make more complex a simple data line repair structure and procedure like that of Kim that does not require connecting a gate line to a data line.

The Office Action responds to this by stating that the dual gate lines of Song merely add redundancy that would not confuse one of ordinary skill in the art. Applicants respectfully submit that the issue of whether one of ordinary skill in the art would not be confused is not the same as the issue of proper motivation to modify a reference, and the Office Action fails to demonstrate the relevance of whether one of ordinary skill in the art would be confused to the issue of proper motivation. The fact that someone can clearly understand how a device works, for example, has not been demonstrated to motivate a skilled worker to modify that device.

To the extent that the Office Action argues that a primary reference virtually never anticipates the need for improvement taught by the secondary reference, and that anything can be improved, merely addresses the possibility of improvement, not the desirability of doing so and, as such, is irrelevant to the issue of proper motivation to modify one reference in view of another. Merely that the prior art can be modified in the manner suggested by the Examiner does not render the modification obvious unless the prior art suggests the desirability of the modification. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-4 (Fed. Cir. 1992).

Furthermore, independent claims 1 and 10 have been amended to recite a combination of features including an extended portion of the gate line providing a gate dummy pattern parallel to said data line extending substantially the entire length of the pixel electrode portion adjacent and

parallel to the data line to overlap with at least one edge portion of said data line and an edge portion of the pixel electrode.

Applicants respectfully submit that neither Kim nor Song disclose this positively recited feature, so even if one of ordinary skill in the art were properly motivated to modify Kim in view of Song, as suggested (which is not the case, for reasons stated above), the resulting modified version of Kim would neither disclose or suggest the claimed invention.

Accordingly, the Office Action does not make out a *prima facie* case of proper motivation to modify Kim as suggested and, thus, does not make out a *prima facie* case of obviousness of the invention recited in independent claims 1 and 10.

Moreover, because dependent claims 3, 5, 6, 8, 21 and 22 depend from claim 1, and claims 12, 15, 17, 23 and 24 depend from claim 10, claims 3, 5, 6, 8, 12, 15, 17 and 21-24 are not obvious at least for the reasons that claims 1 and 10 are not obvious, as stated above.

Furthermore, the rejection of claim 26 is fundamentally improper because it is improperly based on Applicants' own disclosure instead of on the applied art.

Furthermore, the rejection of claim 27 is fundamentally improper because the features positively recited therein are not specifically addressed in the body of the rejection.

Additionally, on page 13, the outstanding Office Action indicates that, as to claim 25, mere duplication of parts is not patentably distinct unless unexpected results are obtained. Applicants respectfully request clarification of this statement because it is contained in the body of the rejection of claims 1, 3, 5, 6, 8, 10, 12, 15, 17 and 21-24, 26 and 27 under 35 U.S.C. §103(a), i.e., not in the body of the rejection of claim 25, and because the features of the claims under rejection that are considered to be "duplication of parts" are not identified. Thus, this statement is unclear and

requires clarification. Moreover, this unclear aspect of the rejection is an additional reason why the outstanding Office Action should not have been made final.

Reconsideration and withdrawal of this rejection of claims 1, 3, 5, 6, 8, 10, 12, 15, 17 and 21-24, 26 and 27 under 35 U.S.C. §103(a) are respectfully requested.

Claim 25 stands rejected under 35 U.S.C. §103(a) as unpatentable over Kim in view of Song, as applied in the rejection traversed above, and further in view of U.S. Patent 5,657,101 to Cheng. This rejection is respectfully traversed.

In the first place, the Kim-Song reference combination is improper for the reasons stated above. Moreover, Cheng is not applied to remedy the aforementioned deficiencies in the Kim-Song reference combination. Accordingly, this rejection is improper and should be withdrawn.

The Office Action admits that Kim in view of Song does not disclose gate dummy patterns on both sides of a data line.

To remedy this deficiency, the Office Action turns to Cheng. In Fig. 5, Cheng discloses storage electrodes 52 slightly separated from data lines 59 and storage electrodes 56 slightly separated from scan lines 40 (col. 4, lines 26-44).

The Office Action alleges that Cheng is evidence of motivation to add gate dummy patterns on both sides of the data line to improve the aperture ratio.

Applicants do not understand why one of ordinary skill in the art would turn to Cheng to improve Kim's aperture ratio because Kim already discloses techniques to improve the aperture ratio and demonstrates no need to have its aperture ratio improved in general, or by rearranging their circuit patterns. Moreover, Cheng does not disclose its storage electrodes to be dummy gate lines.

In fact, Cheng discloses locating its storage electrodes to avoid co-planar shorts, and not to be used as dummy gate lines in any way.

Applicants respectfully submit that one of ordinary skill in the art would have no incentive to look to Cheng for any reason to modify Kim and Song, let alone to redesign Kim-Song to provide dummy gate lines when there is no incentive to provide dummy gate lines in Kim in view of Song, for the reasons discussed above.

Applicants respectfully submit that this rejection is wholly based on improper hindsight reconstruction of Applicants' invention based solely on Applicants' disclosure.

Reconsideration and withdrawal of this rejection of claim 25 under 35 U.S.C. §103(a) are respectfully requested.

Claims 4, 7, 9, 13, 16 and 18 stand rejected under 35 U.S.C. §103(a) as unpatentable over Kim in view of Song, as applied in the rejections traversed above, and further in view of U.S. Patent 5,734,450 to Irie et al. (Irie). This rejection is respectfully traversed.

In the first place, the Kim-Song reference combination is improper for the reasons stated above. Moreover, Irie is not applied to remedy the aforementioned deficiencies in the Kim-Song reference combination. Accordingly, this rejection is improper and should be withdrawn.

Claims 4, 7, 9, 13, 16 and 18 recite a combination of features wherein the gate dummy pattern includes a recess to permit repair to be made by disconnection of the dummy pattern from the gate line.

Applicants respectfully submit that one of ordinary skill in the art would not have any incentive to provide such a recess because one of ordinary skill in the art would not have the incentive to provide for disconnection of repair lines in Kim which only discloses connecting a

repair line, not disconnecting a repair line. Additionally, whereas Kim is directed to correcting open circuits, Irie is directed to correcting short circuits, i.e., just the opposite of what Kim is directed to

Further, Applicants cannot find where Irie discloses a recess (or hole) as recited to disconnect a line. The quoted (in the rejection) "narrow part 44," which is shown in Fig. 2, is just a narrow portion of the gate electrode 41 between the gate electrode 41 and gate line 1. In no sense is it a hole or recess, as recited.

So, even if the improper Kim-Song reference combination were modified in view of Irie, the resulting reference combination would not have a recess, as recited.

The Office Action responds to this argument by stating that the recess is on the left side of the narrow part, 44 that leads to the gate electrode 41, in Fig. 2. Applicants respectfully disagree because Fig. 2 is a highly schematic diagram and shows no structure whatsoever. The Office Action provides no objective factual evidence of the existence of the recited recess in Fig. 2.

In this regard, there is no explicit disclosure of a recess of hole on the left side of the narrow part 44 and in order to provide a *prima facie* showing that Irie discloses such a feature inherently, the Office Action must provide objective factual evidence that such a feature is not just possibly there, or not just probably there, but is necessarily there, and the office Action does not provide such objective factual evidence. Inherency may not be established by probabilities or possibilities. In re Oelrich, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981) and In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

Further, with respect to claims 7 and 16, because the combined references do not render obvious the claimed recess, they do not render obvious providing a protrusion to cover the non-existent recess. Moreover, the Office Action fails to explain how, if a protrusion covers a recess, one of ordinary skill in the art uncovers the recess to make the recited disconnection. It appears to

Applicants that the proposed rejection achieves an inoperative device for the intended purpose of disconnecting a line. In this regard, Applicants direct the Examiner's attention to In re Sponnoble, 405 F.2d 578, 587, 160 USPQ 237, 244 (CCPA 1969), which indicates that references taken in combination teach away when they would produce a "seemingly inoperative device."

Accordingly, this rejection of claims 4, 7, 9, 13, 16 and 18 under 35 U.S.C. §103(a) is improper and should be withdrawn.

Lastly, the Office Action states, on page 22, that, insofar as Applicant has not argued rationale for rejection of dependent claims, Applicant has thereby acquiesced. Applicants do not understand this statement because Applicants have traversed all outstanding rejections on their merits and have not acquiesced in any of those rejections. Clarification is respectfully requested.

NEW CLAIM 28

Applicants have added new claim 28, which is allowable at least for the reasons that claim 1, from which claim 28 depends, are allowable as stated above. Additionally, Kim does not disclose the branched feature recited in claim 28.

CONCLUSION

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. It is believed that a full and complete response has been made to the outstanding Office Action, and that the present application is in condition for allowance.

However, if there are any outstanding issues, the Examiner is invited to telephone Robert J. Webster (Reg. No. 46,472) at (703) 205-8000 in an effort to expedite prosecution.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or to credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly extension of time fees.

Respectfully submitted,

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